OIPE JC88
JUN 27 2005
PATENT & TRADEMARK OFFICE

THE SPECIFICATION

The amended specification reads:

at page 4, lines 7 through 9:

Figure 1 comprises curves of TG-FTIR pyrolysis data for major products for NIST Wheat Straw at 10° C/min; a) time-temperature history, balance curve from TGA (thermogravimetric analyzer) and sum of gases from FT-IR; b-f) differential and cumulative evolution curves for major volatile products;

a new page 5 follows:

OIPE JCG8
JUN 27 2005
PATENT & TRADEMARK OFFICE

Table 1. Elemental Analysis of Individual and Composite Samples (wt.%)

Sample	Basis	Moisture	Ash	C	H	O	S	N
Polyethylene[a] (Aldrich)	DAF			85.7	14.3	0.0	0.0	0.0
Cellulose[b] (Avicel PH-102)	AR	5.0						
	D		<0.05	44.0	6.2	49.8	~0.0	~0.0
	DAF			44.0	6.2	49.8	~0.0	~0.0
Wheat Straw[b] (NIST)	AR	7.9						
	D		9.0	43.7	5.6	40.9	0.2	0.6
	DAF			48.0	6.2	44.9	0.2	0.7
Urea[a] (Aldrich)	DAF			20.0	6.7	26.6	0.0	46.7
Gerepon[c] TC-42 (Rhône -Poulenc)	D		7.6	55.9	10.6	10.6	10.6	4.7
	DAF			60.5	11.5	11.5	11.5	5.0
Methionine[a] (Aldrich)	DAF			40.3	7.4	21.4	21.5	9.4
Composite	D		3.8					
	DAF			48.7	8.2	31.0	3.4	8.7

Notes: AR = As-received; D= Dry; DAF = Dry, Ash Free
a = determined from chemical formula
b = determined by Huffman Laboratories (Golden, CO)
c = estimated from approximate chemical formula

OIPE JC88 JUN 2 7 2005 PATENT & TRADEMARK OFFICE

at page 9, lines 18 through 24:

The TG-FTIR/PP experiments were done for both the composite mixture sample and also the wheat straw sample. A set of results for the composite mixture, shown in Table 2, demonstrate the very strong effect of the post pyrolysis temperature on the product composition. As the post pyrolysis temperature increases, the tar yields decline to zero and the CO yields increase dramatically. The CH_4, H_2O and CO_2 yields go through a maximum. Similar results are observed for post-pyrolysis runs done with the pure wheat straw sample. In order to get yield data on H_2, the GC (gas chromatograph) ~~GD~~ system was used to take periodic samples.

at page 10, line 1 through Page 11, line 8:

The H_2 measurements were made for selected experiments. Since the GC was not used to monitor the entire evolution profile, the complete H_2 yield was calculated by using the CH_4 and CO yields as internal standards, since these gases are measured both by FT-IR and GC. In order to estimate the H_2 yields for experiments where no GC measurements are made, a correlation was made between the existing H_2 yield data and the CO yields. Although this correlation consisted of only three points, it was linear over a wide range of CO and H_2 concentrations and was used to interpolate the results for the remainder of the experiments in Table 2. Based on these estimates, the change in the molar gas composition for the fast flow experiments with the composite mixture was determined, as shown in Table 3

(excluding the composition of the inert helium carrier gas). The data in Table 3 show that with increasing pyrolysis temperature, the gas composition becomes rich in H_2 and CO and that CH_4, CO_2 and H_2O are also key components. While tars and minor heteroatomic ~~heterotomic~~ species are present at low temperatures, these are largely eliminated as the temperature increases.

at page 15, lines 3 through 21:

A basic neural network development software package has been developed for National Instrument's (Austin, TX) LabVIEW software. Working in the LabVIEW environment provides for a flexible user interface, and easy access to many types of data. The Neural Network Development for LabVIEW (NNDLab) software includes tools to extract custom data sets directly from VISTA software. Backpropagation networks can be trained and tested using delta rule, delta-bar-delta rule, or extended delta-bar-delta rule paradigms, and could easily be imbedded into dedicated analysis or process control LabVIEW programs. This package was used to control NO_x in a selective non-catalytic reduction (SNCR) process developed at Nalco Fuel Tech. (NFT). A data set was collected using in-situ measurements of NO, CO, and NH_3 by FT-IR and for six process setpoints and the transition periods between the setpoints.